

What is claimed is:

1. A method of forming an isolation film in a semiconductor device, comprising the steps of:

5 forming trenches for isolation at regions where wells will be formed on a semiconductor substrate;

forming an epitaxial growth layer on the semiconductor substrate within the trench; and

burying the trenches with insulating films to form an isolation film.

10

2. The method as claimed in claim 1, wherein during formation of the epitaxial growth layer, a doping gas of the same kind to the well is implanted in-situ.

15 3. The method as claimed in claim 1, further comprising the step of implementing an ion implantation process for implanting a doping gas of the same kind to the well, after the epitaxial growth layer is formed.

20 4. The method as claimed in claim 1, wherein the epitaxial growth layer is formed using one of N type SiGe, P type SiGe, N type SiC, P type SiC, N type SiCGe and P type SiCGe.

5. The method as claimed in claim 3, wherein the ion implantation process is simultaneously formed with the ion implantation process for

forming the well.

6. A method of forming an isolation film in a semiconductor device, comprising the steps of:

5 providing a semiconductor substrate having a region where a P well will be formed and a region where a N well will be formed;

forming an oxide film and a nitride film on the semiconductor substrate;

removing portions of the nitride film and the oxide film and the semiconductor substrate below them to form first and second trenches in the
10 region where the P well will be formed and the region where the N well will be formed, respectively;

implementing an epitaxial growth process including a doping process to form a N type epitaxial growth layer in the first trench and a P type epitaxial growth layer in the second trench; and

15 burying the first and second trenches with insulating films to form an isolation film.

7. The method as claimed in claim 6, wherein the N type epitaxial growth layer is formed by simultaneously implementing an epitaxial growth
20 process including a process of implanting ions of the same kind to the N well.

8. The method as claimed in claim 6, wherein the N type epitaxial growth layer is formed by implementing a process of implanting ions of the same kind to the N well after the epitaxial growth process is performed.

9. The method as claimed in claim 6, wherein the P type epitaxial growth layer is formed by simultaneously implementing an epitaxial growth process including a process of implanting ions of the same kind to the P well.

5

10. The method as claimed in claim 6, wherein the P type epitaxial growth layer is formed by implementing a process of implanting ions of the same kind to the P well after the epitaxial growth process is performed.

10 11. The method as claimed in claim 7, wherein the doping concentration of the N type epitaxial growth layer is higher than those of the N well.

12. The method as claimed in claim 8, wherein the doping
15 concentration of the N type epitaxial growth layer is higher than those of the N well.

13. The method as claimed in claim 9, wherein the doping
20 concentration of the P type epitaxial growth layer is higher than those of the P well.

14. The method as claimed in claim 10, wherein the doping concentration of the P type epitaxial growth layer is higher than those of the P

well.

15. The method as claimed in claim 7, wherein energy is changed
5 upon the ion implantation process so that distribution of the doping
concentration in the doping process is advertently differentiated toward the
semiconductor substrate facing the isolation insulating film, and during the
doping process included in the process of forming the epitaxial growth layer,
concentration distribution of the doping source gas is advertently controlled.